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Marine Casualty Investigations

Enquêtes sur les accidents maritimes

Investigation Report to the Minister pursuant to sections 542 or 545 of the Canada Shipping Act

Rapport d'investigation au Ministre conformément aux articles 542 ou 545 de la Loi sur la marine marchande du Canada

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REPORT OF INVESTIGATION INTO THE CIRCUMSTANCES CONCERNING THE STRIKING INVOLVING THE SPANISH BULK CARRIER "LAURA PANDO" AND THE LIBERIAN OBO "MAUREEN" AT PORT CARTIER ANCHORAGE ON DECEMBER 2, 1985.

Report No. 439

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REPORT OF INVESTIGATION INTO THE CIRCUMSTANCES CONCERNING THE STRIKING INVOLVING THE SPANISH BULK CARRIER "LAURA PANDO" AND THE LIBERIAN OBO "MAUREEN" AT PORT CARTIER ANCHORAGE ON DECEMBER 2, 1985.

Particulars of Vessels

a)	Name	"LAURA PANDO" ex "SOLEDAD MARIA"
	Port of Registry	Bilbao, Spain
	Official Number	7944
	Call Sign	EDTL
	Type of Vessel	Bulk Carrier
	Gross Tonnage	44,992
	Net Tonnage	33,907
	Registered Length	243.01 m
	Registered Breadth	32.21 m
	Registered Depth	19.72 m
	Propulsion	Burmeister Wain, 7 Cyl., Diesel Engine 17,500 BHP, Driving Single Fixed-Pitch Propeller
	Built	1971, Astilleros Espanoles S.A.
	Complement	31
	Draught (at time of casualty)	F 5.2 m, A 7.3 m
	Cargo	Nil
	Ballast	19,800 tonnes water
	Classification	Germanischer Lloyd 100A+4
	Owners/Operators	Maritima Antares S.A. Santander, Spain
	Local Agents	Quebec Mining Company Port Cartier, Quebec

b)	Name	"MAUREEN"
	Port of Registry	Monrovia, Liberia
	Official Number	7543
	Call Sign	ELDD 8
	Type of Vessel	Ore/Bulk/Oil Carrier
	Gross Tonnage	45,278
	Net Tonnage	24,427
	Registered Length	235 m
	Registered Breadth	32.21 m
	Registered Depth	19.51
	Propulsion	B & W 5 Cyl., Diesel Engine 15,200 BHP, Driving Single Fixed-Pitch Propeller
	Built	1985 Astilleros Espanoles, S.A.
	Complement	30
	Draught (at time of casualty)	F 4.8 m A 8.66 m
	Cargo	Nil
	Ballast	25,000 tonnes water
	Classification	ABS+A1 Bulk and Ore or Oil Carrier Ice Strengthening - Class C
	Owners/Operators	Ultramar Shipping Co. Inc. Tarrytown, New York 10591, U.S.A.
	Local Agents	Quebec Mining Company Port Cartier, Quebec

Navigational Equipment

"LAURA PANDO"

Radar (1)	3 cm Kelvin Hughes 1600
Radar (2)	10 cm Selenia RTM 60 S
Direction Finder	Plath Navigon
Loran C	Marine Micro
Echo Sounder	Crame Echonav
VHF Radio (2)	ITT-Marine STR 12 M
Gyro Compass	Sperry, 5 Repeaters, Error +1°
Magnetic Compass	Trepat

"MAUREEN"

Radar (1)	3 cm 1650/12x Raytheon Raycas
Radar (2)	10 cm 1660/12s Raytheon Raycas
ARPA	Automatic Radar Plotting Aid Norcontrol Data Bridge 7
Direction Finder	Furuno Mod. FD-120
Loran C	Navidyne Navigator ESZ-7000
Echo Sounder	Furuno F851-S
Doppler Log	(speed & depth) Raytheon Diesel 250
Satellite Navigator	Navidyne ESZ-4000
Gyro Compass	Sperry, 11 Repeaters, Error -0.5°
Magnetic Compass	Marine Data
VHF Radio (1)	Sait D72A
VHF Radio (2)	Horizon Mod.861.S

Background

Note: 1) A glossary of terms and abbreviations can be found following the Findings in this report.

2) All times in this report are expressed in Eastern Standard Time (UTC minus 5 hours).

On the morning of December 2, 1985, the Spanish bulk carrier "LAURA PANDO" and the Liberian OBO "MAUREEN" were both at anchor off Port Cartier, Quebec, waiting to berth. They were anchored some seven cables apart.

During the forenoon the wind increased in force and the visibility became restricted in the accompanying precipitation. Both vessels independantly noted that the distance between them was closing and the "MAUREEN", the windward vessel, decided to weigh anchor.

At 1155, after the crew had started to heave up the anchor, the "MAUREEN" came into contact with the "LAURA PANDO". Both vessels sustained some damage but were separated within minutes.

There was no personal injury or pollution as a result of the striking.

Narrative

Port Cartier Harbour is a private harbour of the Quebec Cartier Mining Company. The port is mainly used for shipping iron ore concentrates and transhipping grain.

Anchorage berths A to G have been established off Port Cartier and the positions are shown on the chart.

The OBO "MAUREEN" departed Quebec City in ballast on November 26, 1985, for Port Cartier to load grain. On board was a crew of 30 and the vessel carried 25,000 tonnes of water ballast. The departure draft was 5.77 m forward and 8.25 m aft.

This was the first voyage for the "MAUREEN" to load at the port of Port Cartier.

An uneventful passage was made to the anchorage area off Port Cartier Harbour with the vessel arriving there at 1145 on November 29, 1985. The port anchor was let go with 7 shackles in the water in a position determined by observations to be Latitude 49°59.3N., Longitude 66°45'W. Weather

conditions at the time were NW wind, Force 5 Beaufort Scale, good visibility, moderate sea, barometer 1018 and the air temperature was -4°C.

Shortly after she had anchored the Canadian Coast Guard port warden went on board to inspect the holds of the vessel in accordance with the regulations. He issued a Certificate of Detention which stated the following:

1. All holds must be clean and dried.

2. All strum boxes must be clean, dried and left open for inspection.

3. Stability calculation to be submitted according to 1974 Solas grain rules.

The port warden advised the Master that the anchorage ground was poor and if the wind exceeded 25 knots to get underway with an option to proceed to Sept Iles or North of Anticosti Island for shelter.

While the vessel was at anchor, sea watches were maintained by the deck officers, look-outs and engineers. The main engine telegraph was tested once a watch by the OOW and the position of the vessel was determined by distance and bearing, using the radars every hour, and recorded in the anchor booklet. Soundings were observed at frequent intervals and inspection rounds were maintained.

On November 30, 1985, at 1215, while the weather was still good, with the vessel being in ballast and high out of the water, two more shackles were paid out on the anchor cable to a total of 9 shackles in the water to ensure that the vessel would not drag her anchor.

On December 1, 1985, the master requested that the port warden come aboard to inspect the cargo holds which had been cleaned. However, he was advised that it would not be possible at this time due to weather conditions.

The Spanish bulk carrier "LAURA PANDO" had departed El Ferrol, Spain, in ballast on November 21, 1985, with a destination of Port Cartier harbour to load grain. On board was a crew of 31 and the vessel carried 19,800 tonnes of water ballast. Departure draft was 17 ft (5.18 m) forward and 24 ft (7.32 m) aft.

On December 2, 1985, the vessel was approaching Port Cartier and the master was advised by Les Escoumins Traffic that there were 3 ships anchored in the area.

At 0707 the "LAURA PANDO" let go the port anchor, with 7 shackles in the water, in a position determined by observations to be Latitude 49°59.7'N Longitude 66°46.3'W. The ship's head was 060°.

The "LAURA PANDO" was anchored between two ships and the following radar bearings and distances were taken:

Forward ship ("MAUREEN") bearing 075°(T), distance 0.75 miles.

After ship ("BRITISH STEEL") 300°(T) distance 0.75 miles.

Weather conditions at the time were wind direction 110°(T) speed 23 knots, cloudy, sea direction 110° (T), height 1.5 metres, pressure 1002 mb, air temperature 0°C. and visibility 1000 metres.

Sea watches were maintained by the officers and crew.The engine was put on standby and the two radars remained in operation.

According to the "MAUREEN"

On December 2, 1985, at 0700 the first mate of the "MAUREEN" was relieved by the second mate. The master was on the bridge and remained there most of the time. The second mate ascertained the position of the vessel by taking bearing and distance from the fairway buoy and shore, and the water depth was also verified by the Doppler Log (speed and depth) and echo sounder.

As the "LAURA PANDO" was approaching Port Cartier Anchorage area the second mate of the "MAUREEN" used the ARPA system to track the "LAURA PANDO" in addition to monitoring the other two vessels at anchor and the fairway buoy. The "LAURA PANDO" anchored at a distance of 0.63 miles downwind of the position of the "MAUREEN" and the time of arrival was at 0715.

The third mate with 2 lookouts took over the watch on the "MAUREEN" at 0800. The two VHF radios were monitoring channels 12, 14 and 16. The second mate and the master advised the third mate to keep a close watch on the "LAURA PANDO" due to her close proximity and to expect deteriorating weather conditions. About every half hour the third mate took the distance and bearing from the Port Cartier fairway buoy and distances from the other three vessels. All times, bearing and distances were recorded in an anchor booklet. He

also verified the distance on the ARPA system which was showing the letter 'Z' beside the tracked targets on the P.P.I. indicating the vessels were stationary at anchor.

The third mate was unable to sight any vessel in the area as the visibility was restricted to about ½ mile due to the precipitation.

At about 1050 the third mate found the distance, taken by both radars, between his vessel and the "LAURA PANDO" had decreased to about 0.5 miles. The master was advised immediately and verified his vessel's position. At 1100 the distance between the two vessels was 0.45 miles at which time he made the decision to heave up the anchor.

The "MAUREEN" was on a heading of about 070° gyro. The master of the "MAUREEN" entered in the deck logbook abstract that he attempted to contact the "LAURA PANDO" by VHF radio, channels 14 and 16 between 1100 to 1112, but there was no reply. During that time some of the crew consisting of the chief mate, second mate, boatswain and two crewmen, were ordered forward in preparation to heave up the anchor and the engine room was notified. The main engine was on bridge control and at 1113 the master ordered 'dead slow ahead'. At 1118 the crew commenced heaving up the anchor.

At 1130 the main engine was stopped as the crew were having difficulty in heaving the anchor due to the excessive strain and the anchor chain was leading aft. There was no electrical or mechanical malfunction of the anchor windlass or the main engine. The deck log book abstract indicated that the "LAURA PANDO" was passing forward and in order to avoid a collision, the "MAUREEN" tried to contact the "LAURA PANDO" by VHF radio at 1135 to advise her to put her engine astern, but there was no reply.

It was alleged by the "MAUREEN" that at 1155 the bow of the "LAURA PANDO" came in contact with her starboard side in way of D.B. Tank No. 3 starboard fracturing the shell plating and damaging the starboard accommodation ladder. The master advised all parties concerned of the striking and the damage. Shortly afterwards the two vessels separated and the crew surveyed the damage.

Subsequently the "MAUREEN" developed a 2°-3° port list due to water ballast leakage from D.B. tank No. 3 starboard. The list was corrected shortly afterwards by pumping ballast water out of D.B. Tank No.3 port. At the time of the striking the anchor of the "MAUREEN" was still on the bottom with 3 shackles in the water. At 1220 she had her anchor up and commenced steaming.

According to the "Laura Pando"

Shortly after 0800 on December 2, 1985, the master of the "LAURA PANDO" left the bridge. The third mate and two lookouts were on watch. The two radars were in operation, one at 3-mile range and the other at 1.5-mile range. The two VHF radios were in operation on Channels 14 and 16. The officer on watch was monitoring the vessel's position by radar every half hour and the distance between the "LAURA PANDO" and the other vessels continuously. The wind was increasing from the east and the visibility was 2-3 cables.

The master was called to the bridge at about 1100 as the third mate observed the distance between the "LAURA PANDO" and the forward vessel had decreased by 1 cable to 0.61-0.62 miles. The wind at the time was easterly at 40 knots.

At 1110 the master measured the distance by radar again and found it to be 0.54 miles. He called Les Escoumins Traffic Centre and advised them that there was one ship drifting and requested the names of the vessels in the area. The Traffic Centre informed him that there were three other vessels at anchor, the "BRITISH STEEL", the "MAUREEN" and a Russian vessel.

At about 1112 the "LAURA PANDO" called the "BRITISH STEEL" to ascertain if they were drifting and the reply was negative. The "BRITISH STEEL" informed the "LAURA PANDO" that the former was in a position close to the fairway buoy and on the port quarter of the "LAURA PANDO".

The master called the "MAUREEN" on the VHF radio several times without success.

At about 1122 the master of the "LAURA PANDO" sighted the "MAUREEN" about 15°on the starboard bow, drifting across the wind and heading in a direction of about 160°(T).

At about 1130 the "MAUREEN" appeared to have drifted clear on the port bow of the "LAURA PANDO" at a closest distance of about 150 m. The "LAURA PANDO" observed black smoke coming out of the funnel of the "MAUREEN". The "MAUREEN" apparently moved ahead to a position of 0.4 miles away.

At 1138 the "MAUREEN" appeared to be drifting again. The master of the "LAURA PANDO" called Les Escoumins again asking the Traffic Centre to contact the "MAUREEN" and advise them of the situation. In the meantime, the master ordered some of the crew to standby forward. He blew the

ship's whistle but heard no response.

At 1153 the distance between the two vessels was closing fast. The master ordered the crew to clear the bow. At about the same time, over the VHF radio, the "MAUREEN" requested the "LAURA PANDO" to slacken her anchor. At about 1155 the two vessels came in contact with each other. The starboard side of the "MAUREEN" came in contact with the bulbous bow of the "LAURA PANDO". At 1158 the gangway of the "MAUREEN" contacted the port side of the "LAURA PANDO" in way of No. 1 port wing tank, causing water leakage.

At 1212 the "MAUREEN" drifted clear of the "LAURA PANDO". A few minutes later the "LAURA PANDO" started heaving up her anchor, as the master detected that they were closer to the "BRITISH STEEL" as a result of her drifting after the striking.

At 1245 the "LAURA PANDO" was underway on various courses and speeds. The damage was surveyed by the crew and reported to all parties concerned.

As observed by the "BRITISH STEEL"

The "BRITISH STEEL" was anchored close to the fairway buoy. At about 1130 December 2, 1985 the "LAURA PANDO" was anchored about one-half mile away, 4 points on the starboard bow of the "BRITISH STEEL". While the "LAURA PANDO" was in communication with Les Escoumins Traffic trying to identify the name of the drifting vessel, the "BRITISH STEEL" observed on her radar a target drifting down towards the "LAURA PANDO". At this time the visibility was less than a mile and wind was force 8 easterly. The "BRITISH STEEL" was unable to determine the name of the drifting vessel.

The "LAURA PANDO" contacted the "BRITISH STEEL" on the VHF radio to ascertain the latters' position. The "LAURA PANDO" eventually established radio communication with the "MAUREEN" and the "MAUREEN" replied that she was holding her position and had her engines in operation. The "BRITISH STEEL" observed on her radar the dragging vessel moving away from the "LAURA PANDO" and the danger appeared to be over. Shortly thereafter it appeared the dragging vessel was lying across the wind and was drifting towards the "LAURA PANDO".

Just prior to the striking, the "MAUREEN" requested the "LAURA PANDO" to slacken her anchor. The "BRITISH STEEL" also heard the whistle of the "LAURA PANDO" being sounded.

The "BRITISH STEEL" sighted the "MAUREEN" drifting and

striking the bow of the "LAURA PANDO" causing what looked like ballast to pour from the starboard side of the "MAUREEN". The anchor of the "MAUREEN" which was in use was seen to be under water. The stern of the "MAUREEN" swung around and appeared to come into close proximity to the port side of the "LAURA PANDO". The "MAUREEN" appeared to use her engine 'ahead' and move clear of the "LAURA PANDO". Water was seen pouring out of the "LAURA PANDO", port side forward. The "BRITISH STEEL" recorded the striking as having taken place at approximately 1158.

The port warden was informed of the striking at about 1310, December 2. He promptly contacted the two vessels via VHF radio and each vessel advised him of the damage. Neither vessel reported any pollution. Both vessels were advised by the port warden that once the weather improved he would go on board to inspect the damage.

The two vessels at this time were steaming at various courses and speeds off Port Cartier and were in communication with the Traffic Centre.

At 1811 on December 2, 1985, the "MAUREEN" was instructed by her owners to proceed to Quebec City for temporary repairs. Following an exchange to telexes between the master and Canadian Coast Guard Ship Safety branch the vessel was cleared by Ship Safety to proceed at 2254, arriving safely at Quebec City at 1255 on December 4, 1985. The "MAUREEN", however, neglected to clear with the Traffic Centre at Les Escoumins as required by the "Vessel Traffic Regulations".

The "LAURA PANDO" steamed all day December 3, 1985, until she came alongside the grain elevator dock at Port Cartier at 0836 on December 4, 1985.

Analysis

1. Carrying out the investigation

a) Language Barrier

The masters and officers of the "MAUREEN" and the "LAURA PANDO" had a limited knowledge of the English language while the majority of both crews could speak no English whatsoever. The inquiry was carried out without an interpreter. The crew of the "MAUREEN" were of Italian nationality while the crew of the "LAURA PANDO" were of Spanish nationality.

b) Departure of "BRITISH STEEL"

As the "British Steel" had left Port Cartier before the investigation commenced, it was not possible to interview any members of her crew. Information regarding the incident was obtained from a statement submitted by her master.

2. The vessels involved

The "MAUREEN" is a 9-hold, ore, bulk or oil carrier with 6 top wing tanks and 7 lower (double bottom) tanks on each side. She is a new vessel with her bridge, engine-room and accommodation all located aft.

The "LAURA PANDO" is a 9-hold bulk carrier with 5 wing tanks on each side. She is 15 years old with her bridge, engine-room and accommodation all located aft. The "LAURA PANDO" was on a regular run between Port Cartier, Quebec and Spain.

3. Damage to Vessels

a. The starboard side shell plating of the "MAUREEN" was set in heavily, fractured and torn between the third and sixth strake below sheer, frames 215½ and 218½. No. 3 hold shell frames on the starboard side were buckled at frames 216, 217 and 218. Deck beam brackets and bottom brackets were buckled in the same area as well as the bottom side tank plating frames 214½ and 219½. The double bottom tank No. 3 first and second longitudinal stringer from top was fractured and heavily buckled between frames 214 and 220. The three top brackets at frames 216, 217 and 218 were heavily buckled and fractured. The upper corner of web frames 215 and 219 were buckled. The starboard aluminum gangway was buckled.

b. The bulbous bow of the "LAURA PANDO", port of centre line, was heavily set in. The port side first strake below sheer had three minor indents between frames 274-277. Side shell plating No. 461 port side was punctured between frames 270-271 into port wing tank No. 1.

4. Weather Conditions

The weather forecast issued by Environment Canada at 0630 EST on December 2, 1985, was as follows:

"Synopsis at 01.00 am EST and forecast positions by 07.00 pm EST. A 984 mb low pressure system over Lake Huron this morning is accompanied by a warm front passing north of Quebec and a cold front stretching southward. The low pressure is moving northeasterly and will be near Pointe des Monts this evening at 974 mb with the warm front lying along the lower North Shore and the cold front across Mont Joli.

Winds are northeasterly 25 to 40 knots ahead of the warm front and will shift to to southeasterly 15 to 30 in the warm area.

Winds will become westerly 20 to 40 knots behind the cold front. Visibilities are poor in the rain or snow.

St. Lawrence forecast for today valid until midnight and outlook for Tuesday: From Point des Monts to Anticosti. Gale warning in effect. Winds easterly 20 to 30 knots this morning increasing to 30 to 40 knots this afternoon then decreasing to 15 to 25 in the evening. Freezing rain mixed with ice pellets today changing probably to rain in the evening. Visibilities 2 to 5 miles at times lowering to one half mile in heavier precipitation. High near zero. Outlook for Tuesday: Winds westerly 30 to 40 knots. Fair visibilities."

The master and the officers of the "LAURA PANDO" were aware of the weather forecast as the radio operator had copied it on CW and a copy remained on the bridge. The master of the "MAUREEN" was also aware of the weather forecast which was broadcast on VHF weather station Channel 21, and he advised his officers accordingly. The radio operator of the "MAUREEN" did not copy the weather forecast for December 1-2, 1985.

5. Position Monitoring

The "MAUREEN" had two radars and the ARPA computer in operation. One radar was on the six-mile range and the other was on the three-mile range. The third officer monitored the anchored vessels' positions manually every half hour and had the ARPA computer system tracking the three anchored vessels in the area. The ARPA system

features a continuous monitoring system of the ship herself as well as up to 19 other ships at anchor. The tnree anchored vessels had been identified with a "Z" symbol indicating, 'zero speed'. When the officer of the watch found the distance between the two vessels was decreasing, the "LAURA PANDO" had moved away from the "Z" symbol with which she had been identified.

The vessel has 2 Raytheon Radars (10 cm and 3 cm) and both radars were operating satisfactorily on December 2, 1985. The master and the third mate used the fairway buoy 'Port Cartier', as a reference point. They took the distance and bearing from it and recorded it in an anchor booklet. Distance from land was also used (but not logged) to ascertain the position of the vessel. The land marks were considered poor targets for bearings.

The "LAURA PANDO" was not equipped with an ARPA system nor was she required to be under the IMO proposed carriage requirements for Automatic Radar Plotting Aids, which states "an ARPA System is required on other existing ships of 40,000 gross tonnage or more from January 1, 1986". The vessel had one Kelvin Hughes Radar (3 cm) and Selenia RTM radar (10 cm) and both were operating satisfactorily. The ship's position as well as the position of the other vessels was taken by radar and the distances and bearings were plotted on the chart.

6. Charts and Publications

The "MAUREEN" and the "LAURA PANDO" were carrying the proper Canadian charts and publications as required by the regulations for a destination of Port Cartier, including CHS charts No. 4026 and No. 1226 which encompass the port area. The "LAURA PANDO" also had a discontinued, but useful, chart, No. 1240, aboard.

CHS Chart No. 4026 is a general chart covering some 150 miles of the seaward approaches to Port-Cartier, including the traffic lanes, the harbour itself and up-river as far as Pointe des Monts. On this chart, at a scale of 1:300,000, 0.617 cm represents one nautical mile and the assigned anchorage berths off Port Cartier are not shown

CHS Chart No. 1226 comprises chartlets of 'anchorages and habour installations' on the upper north shore of the St. Lawrence River. At the scale of 1:15,000, used on this chart for the area of Port-Cartier, 12.346 cm

represent one nautical mile. The anchorage berths off the port are shown on this chart.

The anchored position of the "MAUREEN" was outside the limits of chart No. 1226. The master and the navigating officers of the "MAUREEN" used chart No. 4026 to monitor the vessel's position when at anchor, but because of its small scale, it is not considered suitable for that purpose. Using only that chart the officers were not able to ascertain the position of the vessel with optimum accuracy and relied on the anchor booklet to record the distances and bearing from the fairway buoy several times each watch. Such method of ascertaining a vessel's position is not reliable and may be deceiving. However, an alternative would have been to devise their own large scale plotting sheet of the area.

The anchored position of the "LAURA PANDO" was marginally within the limits of chart No. 1226 (see attached chartlet), however, CHS Chart No. 1240 was being used on the "LAURA PANDO" to monitor that vessel's position while at anchor off Port-Cartier. The position of the vessel, as determined by distances and bearings from various landmarks, and the positions of the other three vessels at anchor were recorded on the chart. Chart No. 1240, "Port-Cartier and Approaches", had a scale of 1:12,000 (15.433 cm to the nautical mile) but was discontinued in 1983 when it was replaced by chart No. 1226. It covered an area very similar to that covered by chart No. 1226 except that chart No. 1240 extended approximately one mile farther to the east, thus taking in the promontory to seaward of the port area, and, also, extended one half mile farther offshore.

The CHS chart, No. 1221, which is mentioned in the sixth, 1985, edition of the Sailing Directions, was not published until February 14, 1986 nor available for distribution until May,1986. It is not unusual for the publication of a new chart to be anticipated in a new edition of the pilot book.

7. Anchorage off Port Cartier

The "Sailing Directions, Gulf and River St. Lawrence", published by the Canadian Hydrographic Service states:

"**Anchorage** - Anchorage berths A to G have been established off Port Cartier, the positions are shown on the chart. These anchorages are tenable only in fine weather, however the holding ground is reported to be

good."

The charted depth of water at these anchorage positions is between 20 metres at berth "F" and 33 metres at berth "D" and the bottom drops away relatively sharply to the south and east of the anchorage. When the "MAUREEN" arrived off Port Cartier she chose to anchor about a mile and a quarter outside the established anchorage positions in about 75 metres of water.

Anchorage positions are not assigned to arriving vessels by the local agent, the Traffic Centre or the pilotage service and it is left up to individual masters to decide where their vessels will anchor.

When she anchored on November 26, the "MAUREEN" initially put out 7 shackles of chain, slightly more than two times the depth of water. The next day, while the weather was still good, the "MAUREEN" paid out two more shackles of cable, to about three times the depth of water.

The length of cable to use when anchoring is generally governed by:

a) the depth of water,
b) the nature of the holding ground,
c) the strength of tide or current,
d) impending weather and the shelter available at the anchorage,
e) the length of time it is intended to remain at anchor.

The amount of cable considered necessary to prevent a vessel from dragging generally varies from 4 to 7 times the depth of water.

(Referenced publications "Reeds Seamanship and Nautical Knowledge" and "Kemp and Young Seamanship").

The "LAURA PANDO" anchored in about 55 metres of water when she arrived at Port Cartier. She put out about 7 shackles of cable, about 3¼ times the depth of water.

When the "MAUREEN" ceased weighing her anchor she had shortened up the cable to 3 shackles. This length of chain was barely sufficient to reach the bottom at the position in which she had orginally anchored and was only 1 shackle longer than the depth of water in the position of the "LAURA PANDO". At the time of the striking the anchor was thus unable to prevent the

"MAUREEN" from drifting before the wind but still constituted a serious impediment by hampering the vessel's ability to manoeuvre.

8. Radio Communication with Les Escoumins Traffic Centre

Les Escoumins Traffic System controls the region from Sept-Iles to Ile Blanche including the Saguenay River. Sector I covers Port Sept-Iles and Port Cartier on the Quebec north shore. The assigned VHF frequency is 156.7 MHZ (Channel 14). The Traffic Centre also monitors frequencies 156.8 MHZ (Channel 16) and 156.3 (Channel 6).

The personnel operating the Centre are bilingual in English and French.

1055 Les Escoumins Traffic made several calls to the "MAUREEN" without success.

1127 Les Escoumins Traffic Centre received a call from the "LAURA PANDO" inquiring about the names of the vessels in the area and informed the Centre about a vessel drifting in a close proximity at a distance of 0.3 miles.

1130 The "LAURA PANDO" established communication with the vessel "BRITISH STEEL" on Channel 6. In the meantime, the "LAURA PANDO" was in communication with the Traffic Centre and was advised to switch to Channel 12 for communication with others.

1135 The "LAURA PANDO" was calling Traffic Centre.- The vessel was advised to standby.

1137 Les Escoumins Traffic Centre called the "LAURA PANDO" once and then called another vessel.

1151-1152 The "LAURA PANDO" was calling the "MAUREEN". The "MAUREEN" answered back but the "LAURA PANDO" did not copy.

1153 The "LAURA PANDO" called Les Escoumins Traffic Centre advising that the "MAUREEN" was about 50 m away and that it was not possible to avoid a collision. Communication was established between the "LAURA PANDO" and "MAUREEN. The "MAUREEN" requested the "LAURA PANDO" to slacken her chain and go astern.

1156 The "LAURA PANDO" informed Les Escoumins Traffic Centre that the "MAUREEN" had collided with her.

Les Escoumins Traffic Centre established communications with the "MAUREEN" and the "BRITISH STEEL". The "BRITISH STEEL" informed the Centre that visibility at the time was about one mile, easterly wind force 9 Beaufort Scale (35-40 knots) and the sea was very rough. Les Escoumins Traffic Centre collected information about the damage sustained to the "MAUREEN" and to the "LAURA PANDO" and confirmed that neither vessel was releasing any pollutant.

9. Bridge to Bridge Communication

The VHF Radiotelephone Practices and Procedures Regulations, under the heading "Navigation Safety Call" require, in part, the following;

"9.(1) .... every ship .... that is maintaining a listening watch pursuant to Section 8 shall make a navigation safety call on the frequency on which it is maintaining the listening watch

a) when risk of collision with another ship is deemed to exist under those provisions of the Collision Regulations that apply in the area being navigated by the ship;

b) when the navigation safety call of another ship indicates that a close quarters situation may develop;

d) when doubt exists as to the action or the intentions of another ship;

g) before a ship commences a manoeuvre that will impede the safe navigation of other ships."

At the end of the Regulations, and in an explanatory note which is not a part of the Regulations, it states:

"This regulation establishes VHF radiotelephone bridge-to-bridge practices and procedures to ensure safe and efficient navigation."

There was no evidence of radio equipment malfunction on board either vessel. Each vessel had two VHF radios which were monitoring Channels 14 and 16 as required by the Vessel Traffic Centre. Channel 14 was recorded by

the Centre. The recording revealed that the Traffic Centre was unable to establish radio communication with the "MAUREEN" up to about one hour prior to the striking, contrary to the crew's statement. The "MAUREEN" did not inform the "LAURA PANDO" in ample time of her intention to heave the anchor, or otherwise. The "LAURA PANDO" was in constant communication with the Traffic Centre and made several unsuccessful attempts to call the "MAUREEN" to determine her course of action. The reason for the "MAUREEN" failing to respond to VHF calls is unexplained.

10. Machinery and Equipment

There was no electrical or mechanical malfunction with either vessel's main propulsion system or main power supply prior to or after the striking on December 2, 1985.

The crew of the "MAUREEN" encountered some difficulties with the winch while heaving up the anchor, however, the chief officer checked the winch pumps and found no malfunction. There was excessive strain on the anchor winch because the anchor was fast on the sea bottom and the anchor chain was leading aft while the engine was going ahead.

The crew of the "LAURA PANDO" did not heave up her anchor prior to the striking, however, the crew were on standby. In the master's judgement, any decision to heave up the anchor would have been imprudent, as it might have brought his vessel closer to the dragging vessel making a collision inevitable.

11. Qualifications and Experience of Officers

All navigating officers aboard both vessels were carrying their proper certification issued by the country of origin.

a. **"MAUREEN"**

i. The master holds an Italian Master Foreign-Going Certificate issued in 1959, and he is also holder of a Liberian Master Ocean-Going Any Gross Tonnage Certificate issued in November, 1983 to expire November, 1988, and a Liberian Radar Observer Certificate issued in 1984. He started his seagoing career in 1956 and has been in command of deep sea ships, mostly tankers, since 1964. He joined

the vessel October 16, 1985, and this was his first trip to Port Cartier.

ii. The third mate is the holder of an Italian Second Mate Foreign-Going Certificate issued in November 1981, and also holds a Liberian Second Mate Ocean-Going Any Gross Tonnage Certificate issued in August, 1984, to expire August, 1989, and a Liberian Radar Observer Certificate issued in 1984. He attended a Nautical Institute in Italy for 5 years. He has 2½ years experience as third mate and about 4 years total sea time. He joined the vessel on October 15, 1985.

b. **"LAURA PANDO"**

i. The master is the holder of a Spanish Master Foreign-Going Certificate issued in July, 1962, to expire in June, 1986. He has been working as master since 1966 and sailing to Port Cartier on board the "LAURA PANDO" since 1978. This was his second trip in 1985. He has a total of 30 years sea time.

ii. The third mate is the holder of a Spanish Second Mate Foreign-Going Certificate issued in February, 1984, to expire in February, 1989. He joined the vessel in August, 1985, and started as third mate on Ocean-Going Ships in January, 1985. He has 1½ years experience as a cadet and attended a Navigation Academy in Spain for 5 years.

Findings

The striking between the "MAUREEN" and the "LAURA PANDO" was caused by the "MAUREEN" dragging her port anchor in heavy weather. At the time of the striking the "LAURA PANDO" had 7 shackles in the water and the "MAUREEN" had 3 shackles in the water.

It would appear that contributing factors to the striking were that the "MAUREEN":

- failed to use the appropriate large scale chart for Port Cartier CHS 1226, to constantly monitor and plot her anchored position and those of any other vessels in close proximity;

- was manoeuvred, while weighing the anchor, without due consideration being given to the amount of sea room available to leeward where other vessels were anchored in close proximity. This is against the practice of good seamanship;

- failed to indicate her manoeuvres by whistle signals to the nearby vessels, and

- failed to maintain a proper VHF radio listening watch on the appropriate frequency.

Other Findings

- There was no evidence that the "LAURA PANDO" dragged her anchor.

- Neither vessel anchored in the area of the established anchorage berth. The "LAURA PANDO" anchored unnecessarily close to vessels already at anchor in spite of a forecast for continuing deteriorating weather conditions.

- The "MAUREEN" failed to obtain clearance (Permission to Proceed) from Les Escoumins Traffic Centre in accordance with the Canadian Vessel Traffic Regulations.

- Of two CHS charts that covered Port Cartier and approaches, Chart 4026 was of poor scaling for vessels forced to hold off Port Cartier in storm conditions.

OTTAWA, ONTARIO
OCTOBER, 1986.

Glossary

ARPA	Automatic Radar Plotting Aid
CW	"Continuous Wave" radio frequency, Morse Code
Cable	Cable length equals 1 tenth of a nautical mile (185 m)
DB	Double Bottom
EST	Eastern Standard Time
IMO	International Maritime Organization
OBO	Ore/Bulk/Oil Carrier
PPI	Plan Position Indicator
VHF	Very High Frequency Radio Telephone
UTC	Co-ordinated Universal Time

INCLUDING/Y COMPRIS

F ST. LAWRENCE/GOLFE SAINT-LAURENT

1:3 500 000 (22°30')

DEPTHS IN METRES

HEIGHTS IN METRES

Mercator Projection

Compiled by the Canadian Hydrographic Service from information to 1975.

Magnetic Variation Curves are for 1980 epoch. Figures in parentheses indicate the annual change.

DOUBTFUL DATA: Reported but unconfirmed Depths or Dangers are indicated by an encircling dotted line.

International boundaries as shown are approximate.

Chart illustrating the Fishing Zones of Canada as determined by Orders-in-Council, P.C. 1971-366 and P.C. 1977-1 as amended by P.C. 1979-184.

NOTE

FISHING ZONE 4 DOES NOT INCLUDE CANADA'S EXISTING 12 MILE TERRITORIAL SEA.

PROFONDEURS EN MÈTRES

HAUTEURS EN MÈTRES

Projection Mercator

Rédigée par le Service hydrographique du Canada d'information jusqu'à 1975.

Les courbes de déclinaison magnétique correspondent à l'époque 1980. Les chiffres entre parenthèses représentent la valeur de la variation annuelle.

DONNÉES DOUTEUSES: Des profondeurs et des dangers signalés mais non confirmés sont indiqués par un encerclement pointillé.

Les frontières internationales telles qu'indiquées sont approximatives.

Carte illustrant les Zones de pêche du Canada telles qu'établies par les Décrets C.P. 1971-366 et C.P. 1977-1 tel qu'amendé par C.P. 1979-184.

NOTE

LA ZONE DE PÊCHE 4 NE COMPREND PAS LA MER TERRITORIALE CANADIENNE DE 12 MILLES.

C A N A D

QUÉBEC

Port-Cartier

Baie-Comeau

Chicoutimi

Le Baie

Rivière Saguenay

Les Escoumins

Pointe au Père

Rimouski

ST LAWRENCE RIVER / FLEUVE SAINT-LAURENT

PÉNINSULE DE GASPE

Dalhousie

Percé

BAIE DES CHALEURS

DETROIT D'HONGUEDO

DE JACQUES - CARTIER

ÎLE D'ANTICOSTI

Havre-Saint-Pierre

Pte Carleton

Pte à la Renommée

Cap des Rosiers

Cap Chat

Sainte Marine de Gaspé

Cap de la Madeleine

Pte des Monts

Pte du Sud Ouest

Pte du Ouest

Les Sept Iles

Ile du Cageoual

Ile du Grand Caoues

TRUE MERIDIAN / MERIDIEN VRAI

QUEBEC

NEW BRUNSWICK

PRINCE EDWARD ISLAND

ÎLE DU PRINCE ÉDOU

GULF OF ST

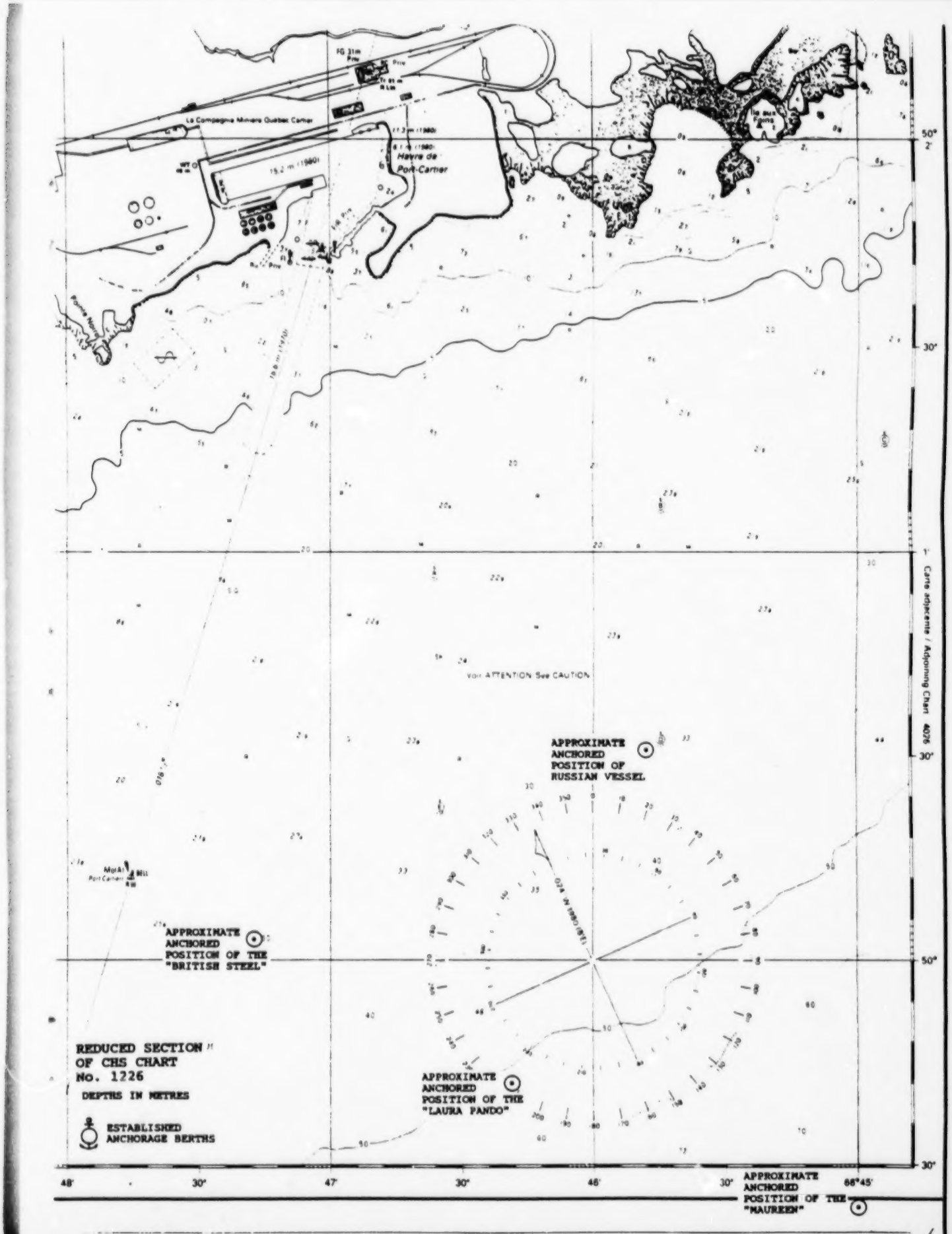
GOLFE SAI

ARNING

...el cables may conduct high ...or proximity to these poses an ...s should not anchor close to ...ver if anchors become hooked ...e taken not to sever the cable ...he date of publication of this ...l Sufficient clearance must be ...ad cables. Actual clearances ...t values due to changes in ...el or water levels

TISSEMENT

...s aériens peuvent conduire une ...vec ou proximité à ceux-ci pose ...avigateurs ne devraient pas ...sous-marins, cependant, si les ...ie, il faut se soucier de ne pas ...que les câbles installés depuis ...e cette édition ne soient pas ...ur libre suffisante doit être ...s aériens. Les hauteurs libres ...des valeurs cartographiées à ...ons les conditions atmosphéri...eau


La Compagnie Minière Québec Cartier
Havre de Port-Cartier
Pointe Noire
Voir ATTENTION See CAUTION
APPROXIMATE ANCHORED POSITION OF RUSSIAN VESSEL
APPROXIMATE ANCHORED POSITION OF THE "BRITISH STEEL"
APPROXIMATE ANCHORED POSITION OF THE "LAURA PANDO"
APPROXIMATE ANCHORED POSITION OF THE "MAUREEN"
REDUCED SECTION OF CHS CHART No. 1226
DEPTHS IN METRES
ESTABLISHED ANCHORAGE BERTHS
Carte adjacente / Adjoining Chart 4026
50° 2'
30'
1'
30'
50°
30'
48'
30'
47'
30'
46'
30'
66°45'